

5 receiving integrated circuit connection data that specifies one or more electrical
6 connections to be made between the integrated circuit devices;
7 determining, based upon the integrated circuit layout data and the integrated
8 circuit connection data, a set of one or more routing indicators that
9 [indicate] specify a set of one or more preferable intermediate routing
10 locations [for] through which a routing path is to be located to connect
11 [between] first and second integrated circuit devices from the set of two or
12 more integrated circuit devices;
13 determining, based upon the integrated circuit layout data, the integrated circuit
14 connection data and the set of one or more routing indicators, the routing
15 path between the first and second integrated circuit devices, wherein the
16 routing path satisfies specified design criteria; and
17 updating the integrated circuit layout data to generate updated integrated circuit
18 layout data that reflects the routing path between the first and second
19 integrated circuit devices.

- 1 2. (NOT AMENDED) The method as recited in Claim 1, wherein determining the
2 routing path includes determining, based upon the integrated circuit layout data,
3 the integrated circuit connection data, bias direction criteria and straying limit
4 criteria, the routing path between the first and second integrated circuit devices,
5 wherein the bias direction criteria specifies a preferred routing direction for a
6 routing path between first and second integrated circuit devices from the set of
7 two or more integrated circuit devices and the straying limit criteria defines a
8 routing region in which the routing path between the first and second integrated
9 circuit devices may be placed.

1 3. (AMENDED) The method as recited in Claim 1, wherein determining the routing
2 path between the first and second integrated circuit devices includes
3 identifying one or more obstacles that block the routing path,
4 determining, based upon the integrated circuit layout data, the integrated circuit
5 connection data and the one or more obstacles, one or more additional
6 routing [indicators,] indicators that specify one or more preferable routing
7 locations through which the routing path is to be located to avoid the one
8 or more obstacles, and
9 determining, based upon the integrated circuit layout data, the integrated circuit
10 connection data, the set of one or more routing indicators and the one or
11 more additional routing indicators, the routing path between the first and
12 second integrated circuit devices.

1 4. (NOT AMENDED) The method as recited in Claim 1, wherein determining the
2 routing path between the first and second integrated circuit devices includes
3 identifying one or more obstacles that block the routing path,
4 changing specified straying limit criteria that defines a routing region in which the
5 routing path between the first and second integrated circuit devices may be
6 placed to generate changed specified straying limit criteria that defines a
7 modified routing region, and
8 determining, based upon the integrated circuit layout data, the integrated circuit
9 connection data, the set of one or more routing indicators and the changed
10 specified straying limit criteria, the routing path between the first and
11 second integrated circuit devices.

1 5. (NOT AMENDED) The method as recited in Claim 1, wherein determining the
2 routing path between the first and second integrated circuit devices includes

identifying one or more obstacles that block the routing path,
determining a set of one or more layer changes to allow the routing path to avoid
the one more obstacles, and
determining, based upon the integrated circuit layout data, the integrated circuit
connection data, the set of one or more routing indicators and the set of
one or more layer changes, the routing path between the first and second
integrated circuit devices.

6. (NOT AMENDED) The method as recited in Claim 1, wherein determining the
routing path between the first and second integrated circuit devices includes
identifying one or more obstacles that block the routing path,
determining a set of one or more bends to be included in the routing path to avoid
the one more obstacles, and
determining, based upon the integrated circuit layout data, the integrated circuit
connection data, the set of one or more routing indicators and the set of
one or more bends, the routing path between the first and second
integrated circuit devices.

7. (NOT AMENDED) The method as recited in Claim 1, wherein determining the
routing path between the first and second integrated circuit devices includes
identifying one or more obstacles that block the routing path,
determining one or more portions of the routing path to be ripped up and rerouted,
and
determining, based upon the integrated circuit layout data, the integrated circuit
connection data, the set of one or more routing indicators and the one or
more portions of the routing path to be ripped up and rerouted, the routing
path between the first and second integrated circuit devices.

1 8. (NOT AMENDED) The method as recited in Claim 7, wherein determining the
2 routing path between the first and second integrated circuit devices further
3 includes
4 determining one or more portions of one or more other routing paths to be ripped
5 up and rerouted, and
6 determining, based upon the integrated circuit layout data, the integrated circuit
7 connection data, the set of one or more routing indicators, the one or more
8 portions of the routing path to be ripped up and rerouted and the one or
9 more portions of the one or more other routing paths to be ripped up and
10 rerouted, the routing path between the first and second integrated circuit
11 devices.

1 9. (NOT AMENDED) The method as recited in Claim 1, wherein determining the
2 routing path between the first and second integrated circuit devices further
3 includes
4 identifying one or more obstacles that block the routing path,
5 determining one or more portions of one or more other routing paths to be ripped
6 up and rerouted, and
7 determining, based upon the integrated circuit layout data, the integrated circuit
8 connection data, the set of one or more routing indicators and the one or
9 more portions of the one or more other routing paths to be ripped up and
10 rerouted, the routing path between the first and second integrated circuit
11 devices.

1 10. (AMENDED) The method as recited in Claim 1, wherein determining the routing
2 path between the first and second integrated circuit devices includes

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3 identifying one or more obstacles that block the routing path, and
4 determining, based upon the integrated circuit layout data, the integrated circuit
5 connection data and the set of one or more routing [indicators and]
6 indicators, the routing path between the first and second integrated circuit
7 devices, wherein the routing path is routed from the second integrated
8 circuit device to the first integrated circuit device.

1 11. (NOT AMENDED) The method as recited in Claim 1, wherein determining the
2 routing path between the first and second integrated circuit devices includes
3 identifying one or more obstacles that block the routing path,
4 determining one or more locations to employ corner clipping to provide additional
5 space for routing the routing path, and
6 determining, based upon the integrated circuit layout data, the integrated circuit
7 connection data, the set of one or more routing indicators and the one or
8 more locations to employ corner clipping, the routing path between the
9 first and second integrated circuit devices.

1 12. (NOT AMENDED) The method as recited in Claim 1, wherein determining the
2 routing path between the first and second integrated circuit devices includes
3 identifying one or more obstacles that block the routing path,
4 determining one or more integrated circuit layout objects to be moved to provide
5 additional space for routing the routing path, and
6 determining, based upon the integrated circuit layout data, the integrated circuit
7 connection data, the set of one or more routing indicators and moving the
8 one or more integrated circuit layout objects, the routing path between the
9 first and second integrated circuit devices.

1 13. (NOT AMENDED) The method as recited in Claim 1, wherein determining the
2 routing path between the first and second integrated circuit devices includes
3 examining data that indicates whether changes can be made to one or more layout
4 objects defined by the integrated circuit layout data to accommodate the
5 routing of the routing path, and
6 if the data indicates that changes can be made to the one or more layout objects
7 defined by the integrated circuit layout data to accommodate the routing of
8 the routing path, then
9 making one or more changes to the one or more layout objects defined by
10 the integrated circuit layout data, and
11 determining, based upon the integrated circuit layout data, the integrated
12 circuit connection data, the set of one or more routing indicators
13 and the one or more changes made to the one or more layout
14 objects, the routing path between the first and second integrated
15 circuit devices.

1 14. (NOT AMENDED) The method as recited in Claim 13, further comprising
2 generating data that specifies the one or more changes made to the one or more
3 layout objects.

1 15. (NOT AMENDED) The method as recited in Claim 1, wherein determining the
2 routing path between the first and second integrated circuit devices includes
3 determining a set of one or more routing targets to which the routing path is to be
4 routed, and
5 determining, based upon the integrated circuit layout data, the integrated circuit
6 connection data, the set of one or more routing indicators and the set of

7 one or more routing targets, the routing path between the first and second
8 integrated circuit devices.

1 16. (NOT AMENDED) The method as recited in Claim 1, wherein determining the
2 routing path between the first and second integrated circuit devices includes
3 performing one or more design rule checks on one or more portions of the routing
4 path as the routing path is being determined.

1 17. (NOT AMENDED) The method as recited in Claim 16, further comprising
2 performing a design rule check on the updated integrated circuit layout data,
3 wherein the design rule check does not check one or more layout objects
4 previously checked during determination of the routing path.

1 18. (AMENDED) The method as recited in Claim 1, wherein determining the routing
2 path between the first and second integrated circuit devices includes
3 extending the routing path a specified amount to generate an extended portion of
4 the routing path, and
5 selectively performing a design rule check on only the extended portion of the
6 routing path.

1 19. (NOT AMENDED) The method as recited in Claim 1, wherein all attachment and
2 bend angles defined by the updated integrated circuit layout data are multiples of
3 ninety degrees.

1 20. (NOT AMENDED) The method as recited in Claim 1, wherein one or more
2 attachment or bend angles defined by the updated integrated circuit layout data
3 are multiples of other than ninety degrees.

1 21. (NOT AMENDED) A method for automatically verifying an integrated circuit
2 layout, the method comprising the computer-implemented steps of:
3 receiving integrated circuit layout data that defines a set of two or more layout
4 objects contained in the integrated circuit layout;
5 performing a first design rule check on a layout object from the set of two or more
6 layout objects by evaluating the layout object against specified design
7 criteria;
8 changing one or more values defined by the specified design criteria to generate
9 updated specified design criteria, wherein the changing of the one or more
10 values is performed after a specified amount of time has elapsed and is
11 made with respect to either the layout object or one or more other layout
12 objects from the set of two or more layout objects; and
13 performing a second design rule check on the layout object by evaluating the
14 layout object against the updated specified design criteria.

1 22. (AMENDED) A method for automatically routing an integrated circuit, the method
2 comprising the computer-implemented steps of:
3 receiving integrated circuit layout data that defines a set of two or more integrated
4 circuit devices to be included in the integrated circuit;
5 receiving integrated circuit connection data that specifies one or more electrical
6 connections to be made between the integrated circuit devices;
7 determining, based upon the integrated circuit layout data and the integrated
8 circuit connection data, a set of two or more join points that are to be
9 electrically [connected;] connected, wherein each join point from the set
10 of two or more join points has an associated set of specified design criteria
11 that control attachment of routing paths thereto;

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12 determining, based upon the integrated circuit layout data and the set of two or
13 more join points, one or more routing paths to connect the set of two or
14 more join points, wherein the one or more routing paths satisfy the
15 specified design [criteria;] criteria associated with the set of two or more
16 join points; and
17 updating the integrated circuit layout data to generate updated integrated circuit
18 layout data that reflects the one or more routing paths.

1 23. (NOT AMENDED) A method for automatically routing an integrated circuit, the
2 method comprising the computer-implemented steps of:
3 receiving integrated circuit layout data that defines a set of two or more integrated
4 circuit devices to be included in the integrated circuit;
5 receiving integrated circuit connection data that specifies one or more electrical
6 connections to be made between the integrated circuit devices;
7 determining, based upon the integrated circuit layout data and the integrated
8 circuit connection data, a routing path between first and second integrated
9 circuit devices that satisfies specified design criteria, wherein determining
10 the routing path between the first and second integrated circuit devices
11 includes
12 determining whether the distance to be routed for a portion of the routing
13 path exceeds a specified distance, and
14 if the distance to be routed for the portion of the routing path does not
15 exceed the specified distance, then routing the portion of the
16 routing path in a single step; and
17 updating the integrated circuit layout data to generate updated integrated circuit
18 layout data that reflects the routing path between the first and second
19 integrated circuit devices.

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1 24. (AMENDED) A computer-readable medium carrying one or more sequences of one
2 or more instructions for automatically routing an integrated circuit, the one or more
3 sequences of one or more instructions including instructions which, when executed
4 by one or more processors, cause the one or more processors to perform the steps of:
5 receive integrated circuit layout data that defines a set of two or more integrated
6 circuit devices to be included in the integrated circuit;
7 receive integrated circuit connection data that specifies one or more electrical
8 connections to be made between the integrated circuit devices;
9 determining, based upon the integrated circuit layout data and the integrated
10 circuit connection data, a set of one or more routing indicators that
11 [indicate] specify a set of one or more preferable intermediate routing
12 locations [for] through which a routing path is to be located to connect
13 [between] first and second integrated circuit devices from the set of two or
14 more integrated circuit devices;
15 determine, based upon the integrated circuit layout data, the integrated circuit
16 connection data and the set of one or more routing indicators, the routing
17 path between the first and second integrated circuit devices, wherein the
18 routing path satisfies specified design criteria; and
19 update the integrated circuit layout data to generate updated integrated circuit
20 layout data that reflects the routing path between the first and second
21 integrated circuit devices.

1 25. (NOT AMENDED) The computer-readable medium as recited in Claim 24,
2 wherein determining the routing path includes determining, based upon the
3 integrated circuit layout data, the integrated circuit connection data, bias direction
4 criteria and straying limit criteria, the routing path between the first and second

5 integrated circuit devices, wherein the bias direction criteria specifies a preferred
6 routing direction for a routing path between first and second integrated circuit
7 devices from the set of two or more integrated circuit devices and the straying
8 limit criteria defines a routing region in which the routing path between the first
9 and second integrated circuit devices may be placed.

1 26. (AMENDED) The computer-readable medium as recited in Claim 24, wherein
2 determining the routing path between the first and second integrated circuit
3 devices includes
4 identifying one or more obstacles that block the routing path,
5 determining, based upon the integrated circuit layout data, the integrated circuit
6 connection data and the one or more obstacles, one or more additional
7 routing [indicators,] indicators that specify one or more preferable routing
8 locations through which the routing path is to be located to avoid the one
9 or more obstacles, and
10 determining, based upon the integrated circuit layout data, the integrated circuit
11 connection data, the set of one or more routing indicators and the one or
12 more additional routing indicators, the routing path between the first and
13 second integrated circuit devices.

1 27. (NOT AMENDED) The computer-readable medium as recited in Claim 24,
2 wherein determining the routing path between the first and second integrated
3 circuit devices includes
4 identifying one or more obstacles that block the routing path,
5 changing specified straying limit criteria that defines a routing region in which the
6 routing path between the first and second integrated circuit devices may be

7 placed to generate changed specified straying limit criteria that defines a
8 modified routing region, and
9 determining, based upon the integrated circuit layout data, the integrated circuit
10 connection data, the set of one or more routing indicators and the changed
11 specified straying limit criteria, the routing path between the first and
12 second integrated circuit devices.

1 28. (NOT AMENDED) The computer-readable medium as recited in Claim 24,
2 wherein determining the routing path between the first and second integrated
3 circuit devices includes
4 identifying one or more obstacles that block the routing path,
5 determining a set of one or more layer changes to allow the routing path to avoid
6 the one more obstacles, and
7 determining, based upon the integrated circuit layout data, the integrated circuit
8 connection data, the set of one or more routing indicators and the set of
9 one or more layer changes, the routing path between the first and second
10 integrated circuit devices.

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1 29. (AMENDED) A system for automatically routing an integrated circuit, system
2 comprising:
3 a data storage mechanism having stored therein
4 integrated circuit layout data that defines a set of two or more integrated
5 circuit devices to be included in the integrated circuit, and
6 integrated circuit connection data that specifies one or more electrical
7 connections to be made between the integrated circuit devices; and
8 a routing mechanism communicatively coupled to the data storage mechanism,
9 the routing mechanism being configured to

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10 determine, based upon the integrated circuit layout data and the integrated
11 circuit connection data, a set of one or more routing indicators that
12 [indicate] specify a set of one or more preferable intermediate
13 routing locations [for] through which a routing path is to be located
14 to connect [between] first and second integrated circuit devices
15 from the set of two or more integrated circuit devices,
16 determine, based upon the integrated circuit layout data, the integrated
17 circuit connection data and the set of one or more routing
18 indicators, the routing path between the first and second integrated
19 circuit devices, wherein the routing path satisfies specified design
20 criteria, and
21 update the integrated circuit layout data to generate updated integrated
22 circuit layout data that reflects the routing path between the first
23 and second integrated circuit devices.

1 30. (NOT AMENDED) The system as recited in Claim 29, wherein the routing
2 mechanism is further configured to determine the routing path by determining,
3 based upon the integrated circuit layout data, the integrated circuit connection
4 data, bias direction criteria and straying limit criteria, the routing path between the
5 first and second integrated circuit devices, wherein the bias direction criteria
6 specifies a preferred routing direction for a routing path between first and second
7 integrated circuit devices from the set of two or more integrated circuit devices
8 and the straying limit criteria defines a routing region in which the routing path
9 between the first and second integrated circuit devices may be placed.

1 31. (AMENDED) The system as recited in Claim 29, wherein the routing mechanism
2 is further configured to determine the routing path between the first and second
3 integrated circuit devices by
4 identifying one or more obstacles that block the routing path,
5 determining, based upon the integrated circuit layout data, the integrated circuit
6 connection data and the one or more obstacles, one or more additional
7 routing [indicators,] indicators that specify one or more preferable routing
8 locations through which the routing path is to be located to avoid the one
9 or more obstacles, and
10 determining, based upon the integrated circuit layout data, the integrated circuit
11 connection data, the set of one or more routing indicators and the one or
12 more additional routing indicators, the routing path between the first and
13 second integrated circuit devices.

1 32. (NOT AMENDED) The system as recited in Claim 29, wherein the routing
2 mechanism is further configured to determine the routing path between the first
3 and second integrated circuit devices by
4 identifying one or more obstacles that block the routing path,
5 changing specified straying limit criteria that defines a routing region in which the
6 routing path between the first and second integrated circuit devices may be
7 placed to generate changed specified straying limit criteria that defines a
8 modified routing region, and
9 determining, based upon the integrated circuit layout data, the integrated circuit
10 connection data, the set of one or more routing indicators and the changed
11 specified straying limit criteria, the routing path between the first and
12 second integrated circuit devices.

1 33. (NOT AMENDED) The system as recited in Claim 29, wherein routing
2 mechanism is further configured to determine the routing path between the first
3 and second integrated circuit devices by
4 identifying one or more obstacles that block the routing path,
5 determining a set of one or more layer changes to allow the routing path to avoid
6 the one more obstacles, and
7 determining, based upon the integrated circuit layout data, the integrated circuit
8 connection data, the set of one or more routing indicators and the set of
9 one or more layer changes, the routing path between the first and second
10 integrated circuit devices.

PLEASE ADD THE FOLLOWING NEW CLAIM:

1 34. (NEW) The method as recited in Claim 1, wherein each routing indicator from
2 the set of one or more routing indicators further specifies a routing direction for
3 the routing path.